CLAIMS

1. A multi-layered, multi-piece golf ball comprising:

a core;

an intermediate layer; and

a cover,

wherein the core has a spherical body and ribs, which are arranged on the surface of the spherical body and have a height that is almost the same as the thickness of the intermediate layer, and

the intermediate layer fills a plurality of concave portions that are surrounded by the ribs and disposed between the surface of the spherical body and the cover.

2. The multi-piece golf ball according to Claim 1, wherein the ribs are uniformly formed on the surface of the spherical body.

3. The multi-piece golf ball according to Claim 1, wherein the ribs are arranged so that the plurality of concave portions have the same shape.

4. The multi-piece golf ball according to Claim 1, wherein the ribs are large-diameter ribs that extend along three great circles drawn on the spherical body in such a manner as to intersect each other at right angles.

5. The multi-piece golf ball according to Claim 1,

wherein each rib is provided with a notch or notches so as to form a passageway or passageways between adjacent concave portions.

6. The multi-piece golf ball according to Claim 1, wherein each rib is structured so as to have a trapezoidal profile in its sideways cross-section and the width of the end portion of the rib in the outward radial direction is 1.5 to 2.0 mm and the width of the end portion thereof in the inward radial direction is 3.0 to 6.0 mm.

7. A multi layered multi-piece golf ball comprising:

a core;

an intermediate layer; and

a cover,

wherein the thickness of the cover is 0.8 to 2.4 mm;

the core has a spherical body and ribs that are arranged on the surface of the spherical body and have a height that is almost the same as the thickness of the intermediate layer;

the ribs are structured so as to extend along three great circles drawn on the spherical body in such a manner as to intersect each other at right angles, and have a height of 1.2 to 4.6 mm;

each circular arc section partitioned by the intersections of the great circles is provided with a notch or notches;

the length of the upper end portion in each circular arc section without a notch is no smaller than 10 mm and the

depth of each notch is no smaller than 1.2 mm; and

the intermediate layer fills 8 concave portions surrounded by the ribs and disposed between the spherical body and the surface of the spherical body.

8. The multi-piece golf ball according to Claim 7, wherein each notch has a plane extending along the circular arc section from one point on a normal line on the spherical body that passes through the intersection of the great circle, and the plane has an angle not smaller than 90° relative to the normal line.

9. The multi-piece golf ball according to Claim 8, wherein each angle made between the plane and the normal line is 91 to 93°.

10. The multi-piece golf ball according to Claim 7, wherein each notch is formed in the middle of the circular arc section in the circular direction.

11. The multi-piece golf ball according to Claim 10, wherein each notch has two planes, each extending toward the intersection from one point of a normal line of the spherical body that passes through the mid point of each circular arc section in the circular direction, wherein the angle made between the plane and the normal line is 45 to 48°.

12. The multi-piece golf ball according to Claim 10, wherein each notch has side faces along the two planes,

each extending toward the intersection side from one point of a normal line of the spherical body that passes through the mid point of each circular arc section in the circular direction, and a base that connects the two side faces,

wherein the angle made between each side face and the normal line is 45 to 48°.

13. The multi-piece golf ball according to Claim 7, wherein the rib has a trapezoidal profile in its sideways cross-section, the width of the end portion of the rib in the outward radial direction is 1.5 to 2.0 mm, and the width of the end portion thereof in the inward radial direction is 3.0 to 6.0 mm.

14. A method for manufacturing the multi-piece golf ball of Claim 1 comprising:

a first process of molding the core;

a second process of press molding a pair of hemispherical, shell-like pieces for forming the intermediate layer, wherein the pieces are composed of a rubber composition in a semi-vulcanized condition;

a third process in which the core is placed between the pair of pieces for forming the intermediate layer, the edges of mouths of the pair of the pieces for forming the intermediate layer are put into contact with each other, and the pieces for forming the intermediate layer are fully vulcanized by press molding; and

a fourth process of covering the outer surface of the intermediate layer that is obtained by the full

vulcanization.

15. The method for manufacturing the multi-piece golf ball according to Claim 14, wherein the second process comprises the steps of:

preparing a hemispheric upper part and lower part of the mold having concave portions;

preparing a middle part of the mold provided with separators having a size that can cover the concave portions of the upper part and lower part of the mold, and a pair of hemispheric convex portions each arranged on the upper surface and the lower surface of the separator that are shaped so as to correspond to the inner surface of the intermediate layer; and

molding the pieces for forming the intermediate layer in the semi-vulcanized condition by placing the middle part of the mold between the upper part and lower part of the mold, filling the concave portions of the upper part and lower part of the mold with the material for the intermediate layer, and press molding.

16. The method for manufacturing the multi-piece golf ball according to claim 5 comprising:

a first process of molding the core;

a second process of preparing an upper part and lower part of the mold each provided with a hemispheric concave portion;

a third process of molding the intermediate layer in the concave portions and notches by inserting the core between

the upper part and lower part of the mold, filling the concave portions of the upper part and lower part of the mold with the material for the intermediate layer that is composed of a rubber composition, press molding so that the material for the intermediate layer spreads throughout the entire concave portions through the notches; and

a fourth process of providing a cover over the intermediate layer.

17. The method for manufacturing the multi-piece golf ball according to claim 5 comprising:

a first process of molding the core;

a second process of preparing an upper mold and a lower mold each having a hemispherical concave portion;

a third process of molding an intermediate layer by injection molding after inserting the core between the upper and lower molds; and

a fourth process for providing a cover over the intermediate layer.

18. The method for manufacturing the multi-piece golf ball according to claim 7 comprising:

a first process of molding the core;

a second process of preparing an upper part and lower part of the mold each provided with a hemispheric concave portion;

a third process of molding the intermediate layer in the concave portions and notches by inserting the core between

the upper part and lower part of the mold, filling the concave portions of the upper part and lower part of the mold with the material for the intermediate layer that is composed of a rubber composition, press molding so that the material for the intermediate layer spreads throughout the entire concave portions through the notches; and

a fourth process of providing a cover over the intermediate layer.

19. The method for manufacturing the multi-piece golf ball according to claim 7 comprising:

a first process of molding the core;

a second process of preparing an upper part and lower part of the mold each having a hemispherical concave portion;

a third process of molding an intermediate layer by injection molding after inserting the core between the upper part and lower part of the mold; and

a fourth process of providing a cover over the intermediate layer.